Ascent Solar Technologies, Inc.
Form S-3/A
April 29, 2008

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As filed with the Securities and Exchange Commission on April 28, 2008

Registration No. 333-149740

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

AMENDMENT NO. 1
TO
FORM S-3

REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

ASCENT SOLAR TECHNOLOGIES, INC.

(Exact name of registrant as specified in its charter)

Delaware	**3674**	**20-3672603**
(State or jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code No.)	(IRS Employer Identification No.)

8120 Shaffer Parkway
Littleton, Colorado 80127
(303) 285-9885
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Matthew Foster
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Approximate Date of Commencement of Proposed Sale to Public:
As soon as practicable after the effective date of this Registration Statement.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box: o

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box: o

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. o

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box: o

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box: o

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See definitions of "large accelerated filer," "accelerated filer," and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer o	Accelerated filer o	Non-accelerated filer o (Do not check if a smaller reporting company)	Smaller reporting company ý

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to Be Registered	Amount to be Registered[1]	Proposed Maximum Offering Price per Security[2]	Proposed Maximum Aggregate Offering Price[1][2]	Amount of Registration Fee[3]
Common stock, $0.0001 par value per share	3,737,500	$15.905	$59,444,938	$2,336.19
TOTAL:			$59,444,938	$2,336.19

(1) Includes shares of common stock that may be purchased by the underwriters to cover over-allotments, if any.

(2) Estimated solely for the purpose of calculating the registration fee pursuant to rule 457(o) under the Securities Act of 1933, as amended, based upon the average of the high and low sales prices of our common stock, as reported on the Nasdaq Global Market, on April 24, 2008.

(3) Previously paid.

The Registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the registration statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject to completion, dated April 28, 2008

Preliminary prospectus

3,250,000 shares

Ascent Solar Technologies, Inc.

Common stock

We are offering 3,250,000 shares of our common stock. Our common stock is traded on the Nasdaq Global Market under the symbol "ASTI." On April 24, 2008, the last reported sale price of our common stock on the Nasdaq Global Market was $16.03 per share.

	Per Share	Total
Public offering price	$	$
Underwriting discount	$	$
Proceeds to us, before expenses	$	$

We have granted the underwriters a 30-day option to purchase up to 487,500 additional shares from us to cover over-allotments, if any.

The underwriters expect to deliver the shares against payment in New York, New York on or about , 2008.

Investing in our common stock involves risks. See "Risk Factors" beginning on page 8.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy of this prospectus. Any representation to the contrary is a criminal offense.

JPMorgan

Cowen and Company **Jefferies & Company**

Merriman Curhan Ford & Co.

The date of this prospectus is , 2008

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ABOUT THIS PROSPECTUS

You should rely only on information contained in, or incorporated by reference into, this prospectus, any free writing prospectus and any prospectus supplement or amendment. We have not, and the underwriters have not, authorized anyone to provide you with information different from that contained in this prospectus or incorporated by reference into this prospectus. We are not making offers to sell the securities in any jurisdiction in which such an offer or solicitation is not authorized or in which the person making such offer or solicitation is not qualified to do so, or to anyone to whom it is unlawful to make such offer or solicitation. The information in, or incorporated by reference into, this prospectus and any prospectus supplement or amendment prepared by us may be accurate only as of their respective dates.

Each trademark, service mark or trade name of any other company appearing in this prospectus belongs to its owner. Use or display by us of trademarks, service marks or trade names owned by others is not intended to and does not imply a relationship between us and, or endorsement or sponsorship by, the owners of the trademarks, service marks or trade names.

INDUSTRY AND MARKET DATA

This prospectus includes industry and market data that we obtained from industry publications, third-party studies and surveys and internal company surveys. These sources include the Energy Information Administration, the International Energy Agency, Solarbuzz, LLC, Navigant Consulting, Inc., NanoMarkets, LLC and the National Renewable Energy Laboratory. Industry publications and surveys generally state that the information contained therein has been obtained from sources believed to be reliable. Unless otherwise noted, statements as to our market position relative to our competitors are approximate and based on the above-mentioned third-party data and internal analysis and estimates as of the latest available date. Although we believe the industry and market data and statements as to market position to be reliable as of the date of this prospectus, this information could prove inaccurate. Industry and market data could be wrong because of the method by which sources obtained their data and because information cannot always be verified with complete certainty due to the limits on the availability and reliability of raw data, the voluntary nature of the data gathering process and other limitations and uncertainties. In addition, we do not know all the assumptions regarding general economic conditions or growth that were used in preparing the forecasts from sources cited herein.

PROSPECTUS SUMMARY

This summary highlights information contained in this prospectus. While we believe that this summary highlights some of the most important information about Ascent Solar Technologies, Inc. and this offering, you should read this entire prospectus and the documents incorporated by reference carefully, including "Risk Factors" before deciding to invest in our common stock. References to "we," "us," "our," "Ascent," "Ascent Solar" or the "Company" in this prospectus mean Ascent Solar Technologies, Inc.

Business Overview

We are a development stage company formed in October 2005 to commercialize flexible photovoltaic (PV) modules using proprietary technology. Our technology was initially developed at ITN Energy Systems, Inc. (ITN) by our founder and core scientific team beginning in 1994 and subsequently assigned and licensed to us. Our proprietary manufacturing process deposits multiple layers of materials, including a thin film of highly efficient copper-indium-gallium-diselenide (CIGS) semiconductor material, on a flexible, lightweight, plastic substrate and then laser patterns the layers to create interconnected PV cells, or PV modules, in a process known as monolithic integration. We believe that our technology and manufacturing process provides us with significant advantages over both the crystalline silicon (c-Si) based PV manufacturers that currently dominate the PV market, as well as other thin-film PV manufacturers that use rigid and/or heavier substrate materials such as glass, stainless steel or other metals.

Because our thin-film PV modules require less than 1% of the semiconductor material to achieve the same power output as a c-Si-based PV device, we do not face the supply constraints and raw material costs that affect silicon-based PV manufacturers. Also, relative to our thin-film competitors, our use of CIGS on a flexible, lightweight, plastic substrate not only allows for integration of our PV modules into a variety of building materials and electronic products, but also should enable a reduction in the cost-per-watt ratios, and increases in the power-to-weight and power-to-area ratios, that our PV modules are able to achieve. These metrics will be critical as we position ourselves to compete in both the high value-added, integrated PV markets and the commodity solar panel market. We also believe that, when employed on a sufficiently large commercial scale, our large-format, roll-to-roll manufacturing process and proprietary monolithic integration techniques will allow us to achieve a per watt manufacturing cost lower than that of our competitors and ultimately to attain grid parity *i.e.,* the point at which the cost of our PV-generated power is equal to that of retail power distributed from the electric utility grid in certain geographic markets within five years. We currently are on schedule to begin limited commercial production of our PV modules in the second quarter of 2008 and plan to expand our rated production capacity to approximately 30 MW by the end of 2009. Thereafter, we intend to expand our rated production capacity incrementally as we install and qualify additional production tools, achieving approximately 60 MW of aggregate rated production capacity by the end of 2010 and approximately 110 MW of aggregate rated production capacity by the end of 2011. We believe that we are the only company focused on commercial scale production of PV modules using CIGS on a flexible, plastic substrate.

Our target markets include the building integrated PV (BIPV) market, in which solar modules are incorporated directly into building and construction materials, the electronic integrated PV (EIPV) market, in which solar modules are incorporated directly into portable electronic devices, and the commodity solar panel market. In the BIPV and EIPV markets, we intend to be the supplier of choice by offering high-performance, flexible PV modules that can be integrated directly into products such as roofing shingles, siding and facades, metal and composite panels and roofing membranes in the BIPV market, and electronic packages, casings, battery packs and portable power systems in the EIPV market. In the commodity solar panel market, we intend to leverage our low-cost manufacturing process to compete primarily on the basis of price.

Our marketing and distribution strategy is based on the formation of strategic relationships with key partners, including original equipment manufacturers (OEMs), system integrators and distributors, who deal directly with end-users in our target markets. In 2007, we entered into a strategic relationship with Norsk Hydro Produksjon AS (together with its affiliates, Norsk Hydro). Norsk Hydro is a major global supplier of aluminum-based building systems, and pursuant to our relationship, we intend to integrate our flexible PV modules into building products produced and sold by Norsk Hydro, including sun-shading systems, wall systems and facades. Also, in February 2008, we announced the mutual pursuit of a series of strategic relationships with ITOCHU Corporation (ITOCHU) pursuant to which ITOCHU would, among other things, manage our OEM relationships in Japan and support distribution of our PV modules into markets in which ITOCHU is pursuing solar installations. In March and April 2008, we entered into cooperative development agreements with certain North American and European companies, including ICP Solar Technologies, Inc. of Canada (ICP) and Icopal SAS of France (Icopal), pursuant to which these companies are expected to develop, test and integrate our PV modules into their BIPV or EIPV products. We currently are in discussions with a number of other market participants to establish similar non-exclusive relationships in a variety of geographic markets worldwide.

While focused on speed to market, we believe that quality and consistency of product will be paramount to our success in the marketplace. Consequently, our path to commercialization is defined by a highly disciplined, staged progression based upon the achievement of key milestones and supported by over thirteen years of concerted research and development activity by our scientists. In keeping with this philosophy, we completed construction of a 1.5 MW production line in December 2007 after having consistently achieved PV cell conversion efficiencies of approximately 10% to 12%, and PV module conversion efficiencies of approximately 6% to 8%, and as high as 9.6%, in a pre-production prototyping and test facility that we have operated since the fourth quarter of 2006. Conversion efficiency is the percentage of energy from absorbed light that a device is able to convert into electrical energy. Over time and with further refinement of our existing processes, we believe that our PV modules should be able to achieve efficiencies of 10% to 12%, significantly greater than the 6% conversion efficiency threshold that we believe is necessary for our products to be commercially acceptable in the current marketplace. The 1.5 MW production line incorporates into an integrated process each of the discrete manufacturing steps that have been previously tested in our pre-production prototyping and test facility. In March 2008, we achieved initial operating capability (IOC) of our 1.5 MW production line as an end-to-end integrated process. Early IOC production trials resulted in average thin-film device efficiencies of 9.5% and small area monolithically integrated module efficiencies of up to approximately 7.1%. We intend to commence limited commercial production on our 1.5 MW production line during the second quarter of 2008 with an emphasis on module testing and further optimization of production efficiencies and yield, and we expect to obtain independent certifications of our PV modules from certain government or regulatory organizations, such as Underwriters Laboratory, Inc. (UL), International Electrotechnical Commission (IEC) and Technischer Überwachungs-Verein Rheinland (TÜV), by the second quarter of 2009 after we have demonstrated desired production yields, module efficiencies and other targets on a repeatable basis. We expect to manufacture a total of approximately 2 MW of product on this production line between mid-2008 and the end of 2009 while concurrently working with Norsk Hydro, ITOCHU, ICP, Icopal and other strategic partners to qualify products for sale to end-users. Our manufacturing expansion plan entails the design, installation, qualification, testing and operation of additional production tools to increase our rated production capacity. We plan to expand our rated production capacity to approximately 30 MW by the end of 2009, and thereafter we intend to expand our rated production capacity incrementally as we install and qualify additional production tools, achieving approximately 60 MW of aggregate rated production capacity by the end of 2010 and approximately 110 MW of aggregate rated production capacity by the end of 2011. However, the actual production levels that we are able to

realize at any point during our planned expansion will depend on a variety factors, including our ability to optimize our production process to achieve targeted production yields and module efficiencies.

Market Opportunity

According to the Energy Information Administration (EIA), a statistical agency of the U.S. Department of Energy, worldwide electricity production is expected to increase from 16.6 terawatt-hours (TWh) in 2004 to 30.7 TWh in 2030, with the vast majority produced from fossil fuel sources such as coal, oil and natural gas. This growth along with the increasing cost of fossil fuels and environmental and security concerns have led to sustained efforts to increase the use of renewable resources to generate electricity. To encourage use of renewable energy, national and regional governments around the world have implemented a variety of incentive programs. These programs include capital and production tax credits, tariff structures, and mandates requiring that a minimum percentage of total power be produced using renewable resources. The technologies promoted by these incentives include, among others, solar, wind, geothermal and tidal power.

According to industry reports, annual shipments of PV modules increased from approximately 500 MW in 2002 to approximately 1,985 MW in 2006, representing an average compound annual growth rate of more than 40%, and it is estimated that approximately 2,580 MW of new capacity were shipped in 2007. Industry reports also suggest that the rapid growth of the sector will continue and indicate that shipments will grow to approximately 22,805 MW in 2015. Based on shipment and average module sales price forecasts contained in industry reports, the market opportunity for manufacturers of PV modules during the 2008 to 2011 period is estimated to be roughly $75 billion.

To date, the PV market has been dominated by modules produced using c-Si technology, which accounts for over 90% of the current worldwide installed capacity of PV cells. However, thin-film PV technologies are gaining market share as they generally have certain advantages over c-Si-based PV modules including reduced amounts of semiconductor material, the absence of polysilicon, and the ability to employ lower-cost manufacturing processes. According to industry reports, the production of thin-film PV modules is projected to grow to approximately 6,045 MW in 2015 from an estimated 476 MW in 2007. We believe that our flexible, lightweight PV modules are particularly well suited for integration into building materials. Industry experts estimate that the market for thin-film PV applications in commercial, industrial and residential buildings was approximately $600 million in 2007, and will grow to over $1.8 billion in 2010.

Thin-Film Technologies

Thin-film PV technology refers to the creation of PV modules by affixing a thin layer of semiconductor material to a substrate. Thin-film technologies differ from one another based on the semiconductor material used (*i.e.,* amorphous silicon or a-Si, cadmium telluride or CdTe, or CIGS) and the kind of substrate to which it is affixed (*i.e.,* glass, various metals or plastic). We believe that by using CIGS affixed to a flexible, lightweight, plastic substrate, we can offer a superior product to customers in our target markets. Unlike thin-film PV modules using other semiconductor material, CIGS-based PV modules are characterized by a combination of high conversion efficiencies, an ability to incorporate a flexible substrate and low susceptibility to degradation upon prolonged exposure to ultraviolet light. Our use of a flexible plastic substrate allows us to pursue a variety of product integration opportunities that are not technically or economically feasible for our competitors who use rigid substrates, while also enabling us to reduce our manufacturing costs using proprietary monolithic integration techniques that we believe are not feasible for manufacturers who use flexible metal substrates. We believe that we are the only company currently focused on commercial scale production of PV modules using CIGS on a flexible, plastic substrate.

Competitive Strengths

We believe we possess a number of competitive strengths that provide us with an advantage over our competitors.

We are an early mover in CIGS technology with a proprietary, flexible, lightweight PV product that positions us to penetrate a wide range of attractive high value-added markets. By applying CIGS to a flexible, plastic substrate, we have developed a PV module that is efficient, lightweight and malleable, providing unique opportunities for integration into building material products (such as roofing shingles, siding and facades, metal and composite panels and roofing membranes) and electronic components (such as electronic packages, casings, battery packs and portable power systems). Relative to our competitors, we believe that our early mover advantage in CIGS technology has placed us on an accelerated path to commercialization with a superior product offering.

We have the ability to manufacture PV modules for different markets and for customized applications without altering our production processes. Our ability to produce PV modules in customized shapes and sizes, or in a variety of shapes and sizes simultaneously, without interrupting our production flow provides us with flexibility in determining target markets and product applications, and allows us to respond quickly to changing market conditions. Many of our competitors are limited by their technology and/or their manufacturing processes to a more restricted set of product opportunities.

Our integrated, roll-to-roll manufacturing process and proprietary monolithic integration techniques provide us a cost advantage over our competitors. Historically, manufacturers have formed PV modules by manufacturing individual solar cells and then interconnecting them. Our large-format, roll-to-roll manufacturing process allows for integrated production. In addition, our proprietary monolithic integration techniques allow us to utilize laser patterning to create interconnects, thereby creating PV modules at the same time we create PV cells. In so doing, we are able to eliminate an entire back-end processing step, saving time as well as labor and manufacturing costs relative to our competitors.

Our strategic relationship with Norsk Hydro provides us with direct access to a large customer base in the global BIPV market. Norsk Hydro is a major global supplier of aluminum-based building systems, and our relationship provides us with a strong, established development and marketing partner for accessing the BIPV market in an accelerated manner. Together with Norsk Hydro, we are in the process of developing a product line that would incorporate our PV modules into various Norsk Hydro products such as sun-shading systems, wall systems and facades.

Our proven research and development capabilities position us to continue the development of next-generation PV modules and technologies. Our ability to produce CIGS-based PV modules on a flexible plastic substrate is the result of a concerted research and development effort that began more than thirteen years ago. We continue to pursue research and development in an effort to drive efficiency improvements in our current PV modules and to work toward next-generation technologies and additional applications.

Strategies

Our goal is to become the industry leader in the high value-added BIPV and EIPV markets, where we intend to be the supplier of choice by offering high-performance, flexible PV modules that can be integrated directly into building and construction materials and portable electronic devices. We also intend to compete as a low-cost, high-quality provider in the commodity solar panel market. We plan to employ a multi-pronged strategy focused on three primary functions: manufacturing, marketing and distribution, and research and development.

Manufacturing Strategies

Maintain a methodical, disciplined approach to commercialization in order to minimize shorter term risks while maximizing longer term opportunities;

Test and qualify our 1.5 MW production line in anticipation of commencing limited commercial production in the second quarter of 2008, when we intend to begin supplying development and test modules to customers in support of joint product development efforts and internal testing activities;

Obtain independent certifications of our PV modules from certain government or regulatory organizations such as UL, IEC and TÜV by the second quarter of 2009 after we have demonstrated desired production yields, module efficiencies and other targets on a repeatable basis;

Complete engineering, installation and qualification of production tools for approximately 30 MW of rated capacity by the end of 2009, an additional approximately 30 MW of rated capacity by the end of 2010 and an additional approximately 50 MW of rated capacity by the end of 2011, for a total of 110 MW of rated capacity;

Reduce per watt manufacturing costs through continued improvements in manufacturing efficiencies, yield, and throughput; and

Identify and evaluate suitable locations for expanded production capacity, domestically and abroad, that best serve our target markets and customers.

Marketing and Distribution Strategies

Establish strategic relationships with key partners, including OEMs, system integrators and distributors, providing access to end-users in attractive global markets;

Continue to develop diverse product applications in the BIPV and EIPV markets; and

Develop "commodity modules" to compete on a low-cost basis in the commodity solar panel market.

Research and Development Strategies

Continue to develop technological enhancements, such as multi-junction designs, to enhance performance of our PV modules;

Continue efforts to identify next-generation technologies to serve existing and potential new markets;

Continue to develop improved or alternative manufacturing processes; and

Seek appropriate protections for the intellectual property we develop.

Corporate Information

We are incorporated under the laws of Delaware, our principal business office is located at 8120 Shaffer Parkway, Littleton, Colorado, and our telephone number is (303) 285-9885. Our website address is www.ascentsolar.com. Information contained on our website or any other website does not constitute part of this prospectus.

This Offering

Common stock offered by us in this offering	3,250,000 shares of common stock.
Common stock outstanding after this offering	17,299,352 shares of common stock.
Use of proceeds	For the design, purchase, installation, qualification and testing of production tools for approximately 30 MW of rated production capacity, and for general corporate purposes.
Listing	Our common stock is listed on the Nasdaq Global Market under the symbol "ASTI."
Risk factors	Investing in our common stock involves a high degree of risk. You should carefully consider the information set forth in the "Risk Factors" section.

We have granted the underwriters an option exercisable up to 30 days after the date of this prospectus to purchase up to 487,500 additional shares of our common stock, on the same terms and conditions as the shares offered hereby, to cover over-allotments, if any.

As of March 31, 2008, we had 14,049,352 shares of common stock issued and outstanding. Unless the context indicates otherwise, all share and per-share common stock information in this prospectus:

- assumes a public offering price of $16.03 per share, the last reported sale price of our common stock on the Nasdaq Global Market on April 24, 2008;
- assumes no exercise of the underwriters' over-allotment option;
- assumes no further exercise by Norsk Hydro of an option pursuant to which Norsk Hydro is entitled to purchase additional shares of our common stock and Class B warrants that would enable it to maintain its ownership of up to 35% of our outstanding common stock and warrants;
- assumes no exercise of approximately 10,504,583 outstanding Class B warrants;
- assumes no exercise of approximately 112,500 outstanding warrants issued to the representative of the underwriters of our initial public offering, or of the 112,500 Class A warrants and 225,000 Class B warrants underlying those outstanding warrants; and
- excludes approximately 582,083 shares reserved for issuance upon exercise of outstanding options under our 2005 Stock Option Plan, as amended.

Summary Historical Financial Data

The following table provides a summary of our historical financial information for the periods and at the dates indicated. The summary historical financial information for the fiscal years ended December 31, 2006 and December 31, 2007 and as of December 31, 2006 and December 31, 2007 have been derived from our audited financial statements included elsewhere in this prospectus. The summary historical financial data for the three months ended March 31, 2007 and March 31, 2008 and as of March 31, 2007 and March 31, 2008 have been derived from our unaudited financial statements included elsewhere in this prospectus.

The information presented below should be read in conjunction with "Use of Proceeds," "Capitalization," "Selected Historical Financial Data," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the financial statements and related notes thereto included elsewhere in this prospectus. The historical results are not necessarily indicative of the results to be expected in future periods.

	Year Ended		Three Months Ended	
	Dec 31, 2006	Dec 31, 2007	Mar 31, 2007	Mar 31, 2008
	(dollars in thousands, except per share data)			
Statements of Operations Data:				
Research & Development Revenues	$	$ 1,003	$ 235	$ 305
Research & Development Expenses	(691)	(3,975)	(760)	(1,685)
General and Administrative Expenses	(2,684)	(4,954)	(994)	(1,331)
Loss from Operations	(3,375)	(7,926)	(1,519)	(2,711)
Interest Income (Expense), Net	(806)	1,423	146	312
Net Loss	$ (4,181)	$ (6,503)	$ (1,373)	$ (2,399)
Net Loss Per Share (Basic and Diluted)	$ (1.45)	$ (0.70)	$ (0.24)	$ (0.20)
Weighted Average Common Shares Outstanding (Basic and Diluted)	2,881,639	9,237,252	5,694,561	11,807,789
Other Financial Data:				
Net Cash Used in Operating Activities	$ 2,757	$ 4,294	$ 990	$ 1,608
Capital Expenditures	467	11,013	1,399	6,284

	Actual		As Adjusted[1]
	Dec 31, 2007	Mar 31, 2008	Mar 31, 2008
	(in thousands)		
Balance Sheet Data:			
Cash, cash equivalents and short term investments	$ 37,701	$ 63,747	$ 112,019
Property and equipment, net	1,651	14,505	14,505
Deposits on manufacturing equipment	9,720	2,986	2,986
Total assets	49,817	82,301	130,573
Current and long term liabilities	1,195	5,710	5,710
Total stockholders' equity	48,622	76,590	124,862

(1) As adjusted balance sheet data as of March 31, 2008 are determined by giving effect to the sale of 3,250,000 shares of our common stock by us in this offering at an assumed public offering price of $16.03 per share, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. A $1.00 increase or decrease in the assumed public offering price of

$16.03 per share would increase or decrease as adjusted cash and short term investments by $3,055,000 and total stockholders' equity by $3,055,000, assuming the number of shares offered by us, as shown on the cover of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

RISK FACTORS

An investment in our common stock involves a high degree of risk and many uncertainties. You should carefully consider the specific factors listed below, together with the cautionary statement that follows this section and the other information included, or incorporated by reference into, this prospectus, before purchasing our common stock. If one or more of the possibilities described as risks below actually occurs, our operating results and financial condition would likely suffer and the trading price of our common stock could fall, causing you to lose some or all of your investment in the securities we are offering.

Risks Relating to Our Business

We have a limited history of operations, have not generated any revenue from operations and have not commenced commercial production of our PV modules.

We have a limited operating history and have not generated any revenue from operations. We have not yet obtained independent certifications of our PV modules from certain government or regulatory organizations such as UL, IEC and TÜV. Our plans call for expansion of production capacity, but we do not expect to achieve another approximately 30 MW of rated capacity until the end of 2009. Our ability to achieve our business, commercialization and expansion objectives will depend on a number of factors, including whether:

- we can demonstrate desired production yields, module efficiencies and other targets on a repeatable basis within our planned time frame;
- our products are successfully and timely certified for use in our target markets;
- we successfully qualify production tools to achieve the efficiencies and yields necessary to reach our cost targets as we expand our rated capacity;
- the cost models on which we intend to rely for the manufacture of our PV modules prove accurate;
- we raise sufficient capital to expand our total rated capacity to approximately 110 MW, and whether such capacity will enable us to reach the economies of scale we believe necessary to achieve profitability;
- we receive timely delivery of production tools from our equipment suppliers;
- we effectively manage the planned expansion of our operations; and
- we successfully develop and maintain strategic relationships with key partners, including OEMs, system integrators and distributors, who deal directly with end-users in our target markets.

Each of these factors is critical to our success, and accomplishing each of these tasks may take longer or cost more than expected, or may never be accomplished. It also is likely that problems that we cannot now anticipate will arise and require solution by us. If we do not, our business, results of operations and financial condition could be materially and adversely affected.

We have to date incurred net losses and may be unable to generate sufficient sales in the future to become profitable.

We incurred net losses of $6.5 million in the fiscal year ended December 31, 2007 and $2.4 million in the three months ended March 31, 2008 and reported an accumulated deficit of $14.3 million as of March 31, 2008. We expect to incur net losses for the foreseeable future. Our ability to achieve profitability depends on a number of factors, including the growth rate of the solar energy industry, market acceptance of thin-film and other PV modules, the competitiveness of our PV modules and our

ability to increase production volumes. If we are unable to generate sufficient revenue to achieve profitability and positive cash flows, we might be unable to satisfy our commitments and may have to discontinue operations. We cannot assure you that we will be successful in establishing ourselves as a profitable enterprise.

Our business is based on a new and unproven technology, and if our PV modules or processes fail to achieve the performance and cost metrics that we expect, then we may be unable to develop demand for our PV modules and generate sufficient revenue to support our operations.

Our CIGS on flexible plastic substrate technology is a new and unproven technology in commercial scale production. Our business plan and strategies assume that we will be able to achieve certain milestones and metrics in terms of throughput, uniformity of cell efficiencies, yield, encapsulation, packaging, cost and other production parameters. We cannot assure you that all of our technology will prove to be commercially viable in accordance with our plan and strategies. Further, we may experience operational problems with such technology after its commercial introduction that could delay or defeat the ability of such technology to generate revenue or operating profits. If we are unable to achieve our targets on time and within our planned budget, then we may not be able to develop adequate demand for our PV modules, and our business, results of operations and financial condition could be materially and adversely affected.

We currently do not have certified PV modules and have recorded no sales of such products; further, we expect that significant PV module sales will not occur for some time.

We have recorded no sales of PV modules and have no contracts for such sales. Because we do not plan to commence commercial production until the end of the second quarter of 2008, and because we believe that our PV modules will need to be certified in order for them to be commercially viable, it will be several months before we record significant PV module sales, if ever. We expect that it will be some time before we can determine whether our expectations relating to our products and their target markets are justified. Further, because we will be required to invest substantial resources in pursuing our target markets in advance of any significant revenue stream that may result from such investments, an unanticipated or longer than expected delay of revenue ramp-up could put a strain on our resources, adversely affecting our business, results of operation and financial condition, and could require us to seek additional capital. See "Risk Factors The net proceeds from this offering may be insufficient to fund our planned expansion to approximately 30 MW of rated capacity; also, our planned expansion to approximately 110 MW of rated capacity will require additional capital which we may not be able to obtain on favorable terms, if at all, or without dilution to our stockholders."

A failure or unanticipated delay in securing any necessary or desired certification for our PV modules from government or regulatory organizations could impair sales of our PV modules and materially and adversely affect our results of operations and financial condition.

In order for our PV modules to be commercially sold for use in our target markets, they must first be certified by certain government or regulatory organizations, such as UL, IEC and TÜV. We believe that, in some cases, these certifications would be sought by our customers and, in other cases, by us. A failure or unanticipated delay in securing any necessary or desired certification for our PV modules could impair sales of our PV modules and materially and adversely affect our business, results of operations and financial condition.

Failure to receive timely delivery of production tools from our equipment suppliers could delay our planned expansion of manufacturing capacity and materially and adversely affect our results of operations and financial condition.

Our planned expansion of manufacturing capacity and commercialization timeline depend on the timely delivery of production tools from our equipment suppliers. The relationships with our chosen equipment suppliers are relatively new, and at this point in time we cannot be certain that the equipment orders we place with these suppliers will be fulfilled as we expect or in a timely manner. If delivery of production tools is not made on schedule or at all, then we might be unable to carry out our commercialization and manufacturing expansion plans, produce PV modules in the volumes and at the times that we expect or generate sufficient revenue from operations, and our business, results of operations and financial condition could be materially and adversely affected.

Failure to expand our manufacturing capacity successfully would adversely impact our ability to sell PV modules into our target markets and would materially and adversely affect our business, results of operations and financial condition.

Our growth plan calls for the installation and operation of additional production tools to achieve the manufacturing capacities and cost efficiencies necessary to compete in our target markets. The successful completion and operation of future production tools will require substantial engineering resources and is subject to significant risks, including risks of cost overruns and delays, risks that we may not be able to successfully acquire, install, combine or operate the equipment needed, or the possibility that one or more of the production tools may never be qualified or become operational. Furthermore, we may never be able to operate our production processes in high volume, make planned process and equipment improvements, attain projected manufacturing yields or desired annual capacity, obtain timely delivery of production tools, obtain on reasonable terms adequate facilities in which to install the production tools, configure or retrofit our facilities to accommodate the production tools or obtain the permits to do so, or hire and train the additional employees and management needed to operate and maintain the production tools. Failure to meet these objectives on time and within our planned budget could materially and adversely affect our business, results of operations and financial condition.

Failure to consummate strategic relationships with key partners in the BIPV and EIPV markets, or with distributors in the commodity solar panel market, could adversely affect our projected sales, growth and revenues.

We intend to sell thin-film PV modules for use in BIPV and EIPV products, such as roofing shingles, siding and facades, metal and composite panels, roofing membranes, electronic packages, casings, battery packs and portable power systems. We also intend to sell commodity modules for use in the commodity solar panel market. Our marketing and distribution strategy is to form strategic relationships with BIPV and EIPV suppliers to provide a foothold in these target markets. We also intend to form strategic relationships with distributors in the commodity solar panel market. If we are unable to successfully establish working relationships with such market participants, or if due to cost, technical or other factors, our PV modules prove unsuitable for use in such applications, our projected revenues and operating results could be adversely affected. Further, to the extent that we are able to establish strategic relationships with key partners and distributors, those relationships may be on a non-exclusive basis (for example, our strategic relationship with Norsk Hydro is non-exclusive), which means that our partners are not obligated to use us as their sole source of PV modules, and may instead choose to use the products of our competitors. Any such reduction in demand for our PV modules may have a material adverse effect on our revenues, results of operations and financial condition.

The net proceeds from this offering may be insufficient to fund our planned expansion to approximately 30 MW of rated capacity; also, our planned expansion to approximately 110 MW of rated capacity will require additional capital which we may not be able to obtain on favorable terms, if at all, or without dilution to our stockholders.

The net proceeds from this offering, together with current cash, cash equivalents and short term investments (including the proceeds we received from Norsk Hydro in March 2008 from its exercise of an option to purchase shares of our common stock), may not be sufficient for us to design, purchase, install, qualify and test the production tools for our planned expansion to 30 MW of rated capacity. See "Use of Proceeds" and "Management's Discussion and Analysis of Financial Condition and Results of Operations Liquidity and Capital Resources." Unanticipated costs or cost overruns that we may incur while expanding rated capacity to approximately 30 MW may prevent us from achieving that objective without the need for additional capital. Further, our planned expansion to approximately 110 MW of total rated capacity will require additional capital.

We currently are unable to determine what forms of financing, if any, will be available to us after this offering. If we raise additional funds through the issuance of equity or convertible debt securities, the percentage ownership of our existing stockholders could be significantly diluted, and these newly issued securities may have rights, preferences or privileges senior to those of existing stockholders, including those acquiring shares in this offering. If we raise additional funds through debt financing, which may involve restrictive covenants, our ability to operate our business may be restricted. We cannot assure you that additional financing will be available on terms favorable to us, or at all. If adequate funds are not available or are not available on acceptable terms, if and when needed, our ability to fund our operations, take advantage of unanticipated opportunities, develop or enhance our products, expand capacity to approximately 110 MW of total rated capacity, or otherwise respond to competitive pressures could be significantly limited, and our business, results of operations and financial condition could be materially and adversely affected.

In addition, the terms of our loan from the Colorado Housing and Finance Authority (CHFA) contain covenants that limit our ability, without the consent of CHFA (which consent by the terms of the loan is not subject to a reasonableness requirement), to create or incur additional indebtedness (other than obligations created or incurred in the ordinary course of business); merge or consolidate with any other entity; or make loans or advances to our officers, shareholders, directors or employees. We expect that this CHFA loan will be replaced by a permanent CHFA loan by January 2009, and that documentation relating to the permanent loan may contain negative covenants similar or identical to those associated with the current loan. The permanent loan is expected to have a term of 20 years from the commencement of the original CHFA loan. If we prepay the permanent loan during the initial seven years of its term, we will be subject to a "yield maintenance" prepayment penalty. See "Management's Discussion and Analysis of Financial Condition and Results of Operations Liquidity and Capital Resources." The presence of these negative covenants gives CHFA the ability to bar us from engaging in certain transactions in the future that we may determine are necessary to meet our business objectives, including debt offerings and acquisitions of or by other companies. If CHFA were to withhold its written consent under these or other circumstances, we could be forced to prepay such loans at a premium, which could adversely affect our business, results of operation and financial condition.

We may be unable to manage the expansion of our operations effectively.

We will need to significantly expand our operations in order to reduce the incremental manufacturing costs of our PV modules, secure contracts of commercially material amounts with reputable customers and capture a meaningful share of our target markets. To manage the rapid expansion of our operations, we will be required to improve our operational and financial systems, procedures and controls and expand, train and manage our growing employee base. Our management

team will also be required to maintain and cultivate our relationships with customers, suppliers and other third parties and attract new customers and suppliers. In addition, our current and planned operations, personnel, facility size and configuration, systems and internal procedures and controls might be inadequate or insufficient to support our future growth. If we cannot manage our growth effectively, we may be unable to take advantage of market opportunities, execute our business strategies or respond to competitive pressures, resulting in a material and adverse effect to our business, results of operations and financial condition.

Our PV modules may never gain market acceptance, in which case we would be unable to sell our PV modules or achieve profitability.

Demand for our PV modules may never develop, and our PV modules may never gain market acceptance, if we fail to produce PV modules that compete favorably against competing products on the basis of cost, quality, weight, efficiency and performance. Demand for our PV modules also will depend on our ability to develop and maintain successful relationships with key partners, including OEMs, system integrators and distributors. If our PV modules fail to gain market acceptance as quickly as we envision or at all, our business, results of operations and financial condition could be materially and adversely affected.

If sufficient demand for PV solutions does not develop or takes longer to develop than we anticipate, we may be unable to grow our business, generate sufficient revenue to attain profitability or continue operations.

The solar energy industry is at a relatively early stage of development, and the extent to which PV modules, including our own, will be widely adopted is uncertain. If PV technology proves unsuitable for widespread adoption or if demand for PV modules fails to develop sufficiently, we may be unable to grow our business, generate sufficient sales to attain profitability or continue operations. Many factors, many of which are outside of our control, may affect the viability of widespread adoption of PV technology and demand for PV modules, including:

- the cost effectiveness of PV modules and installed PV systems relative to other renewable energy sources, such as wind, geothermal and tidal power;
- the cost effectiveness of PV modules and installed PV systems relative to conventional carbon-based and other energy sources, such as coal, oil, natural gas and nuclear, and whether the levelized cost of PV can approach that of these conventional energy sources;
- whether PV-generated power reaches grid parity in the geographic markets where our products will be used;
- the availability and amount of government subsidies and incentives to support development of the solar energy industry;
- the deregulation of the electric power industry and the broader energy industry;
- the emergence of other disruptive technologies in the energy industry;
- the ease with which PV solutions can penetrate and adapt to existing energy industry infrastructure;
- the availability of raw materials used in the manufacture of PV products; and
- availability of capital to fund development of technology in the solar energy market.

If the supply of PV modules exceeds the demand for those modules, then we may be forced to reduce the price of our PV modules in order to compete effectively.

Some industry reports forecast overcapacity in the PV module market in ensuing years. In an overcapacity scenario, the supply of PV modules by manufacturers outstrips demand for those products. If either the overall PV module market or our target markets encounter an overcapacity scenario, we may be forced to scale back production or reduce the price of our PV modules in order to generate sales. In either case, our business, results of operations and financial condition could be materially and adversely affected.

Reduced growth in or the reduction, elimination, modification or expiration of government subsidies and economic incentives for solar electricity applications could reduce demand for our products.

National, regional and local governmental bodies in many countries, most notably Germany, Italy, Spain, France, South Korea, Japan, Canada and the United States, have provided support in the form of feed-in tariffs, rebates, tax write-offs and other incentives to end-users, distributors, system integrators and manufacturers of PV products. If any of these subsidies or incentives is discontinued, reduced or substantially modified, if growth in any such subsidies or incentives is reduced, or if renewable portfolio standards or similar production requirements are changed or eliminated, demand for our PV modules in the affected country or countries could decline or never develop, and our results of operations and financial condition could be materially and adversely affected as a result.

We face intense competition from manufacturers of c-Si-based PV modules, other manufacturers of thin-film PV modules and other companies in the solar energy industry.

The solar energy and renewable energy industries are both highly competitive and continually evolving as participants strive to distinguish themselves within their markets and compete with the larger electric power industry. We believe that our main sources of competition are c-Si PV manufacturers, other thin-film PV manufacturers and companies developing other solar solutions, such as solar thermal and concentrated PV technologies.

The thin-film component of the industry is largely made up of a broad mix of technology platforms at various stages of development, and consists of a large and growing number of medium- and small-sized companies. Two of the largest thin-film PV manufacturers are First Solar, Inc. (USA) and United Solar Ovonic LLC (USA), each of which has reported an installed capacity of 100 MW or greater. First Solar manufactures PV modules using CdTe affixed to glass. United Solar Ovonic manufactures PV modules using a-Si affixed to flexible metal foil. Competitors currently developing or selling CIGS-based PV modules include AVANCIS GmbH & Co. KG, Global Solar Energy, Inc., HelioVolt Corporation, Honda Soltec Co. Ltd., MiaSolé, NanoSolar, Inc., SoloPower, Inc. and Würth Solar GmbH & Co. We believe that a number of manufacturers that traditionally have manufactured and sold c-Si-based modules have entered, or in the future may enter, the market for thin-film PV modules and, potentially, CIGS-based PV modules.

Many of our existing and potential competitors have substantially greater financial, technical, manufacturing and other resources than we do. A competitor's greater size provides them with a competitive advantage because they often can realize economies of scale and purchase certain raw materials at lower prices. Many of our competitors also have greater brand name recognition, established distribution networks and large customer bases. In addition, many of our competitors have well-established relationships with our current and potential partners and distributors and have extensive knowledge of our target markets. As a result of their greater size, these competitors may be able to devote more resources to the research, development, promotion and sale of their products or respond more quickly to evolving industry standards and changes in market conditions than we can. Our failure to adapt to changing market conditions and to compete successfully with existing or future

competitors could materially and adversely affect our business, results of operations and financial condition.

A significant increase in the supply of silicon feedstock or a significant reduction in the manufacturing cost of c-Si-based PV modules could lead to pricing pressures on PV modules generally and force us to reduce the sales price of our PV modules.

A significant increase in the supply of silicon feedstock or a significant reduction in the manufacturing cost of c-Si-based PV modules could lead to pricing pressures on PV modules generally. In the face of such downward pricing pressures, we might be forced to reduce the sales prices of our PV modules, which, absent a commensurate decrease in our manufacturing costs, could materially and adversely affect our results of operations and financial condition and prevent us from achieving profitability.

As a public company we are subject to complex legal and accounting requirements that require us to incur substantial expenses, and our financial controls and procedures may not be sufficient to ensure timely and reliable reporting of financial information, which, as a public company, could materially harm our stock price and listing on the Nasdaq Global Market.

As a public company, we are subject to numerous legal and accounting requirements that do not apply to private companies. The cost of compliance with many of these requirements is substantial, not only in absolute terms but, more importantly, in relation to the overall scope of the operations of a small company. Our relative inexperience with these requirements may increase the cost of compliance and may also increase the risk that we will fail to comply. Failure to comply with these requirements can have numerous adverse consequences including, but not limited to, our inability to file required periodic reports on a timely basis, loss of market confidence, delisting of our securities and/or governmental or private actions against us. We cannot assure you that we will be able to comply with all of these requirements or that the cost of such compliance will not prove to be a substantial competitive disadvantage vis-à-vis our privately held and larger public competitors.

The Sarbanes-Oxley Act of 2002 (Sarbanes-Oxley) requires, among other things, that we maintain effective internal control over financial reporting and disclosure controls and procedures. In particular, we must perform system and process evaluation and testing of our internal control over financial reporting to allow management and our independent registered public accounting firm to report on the effectiveness of our internal control over financial reporting, as required by Section 404 of Sarbanes-Oxley. We currently expect that we will be required to comply with all the requirements of Section 404 beginning with our annual report on Form 10-K for the fiscal year ending December 31, 2008. Our compliance with Section 404 of Sarbanes-Oxley will require that we incur substantial accounting expense and expend significant management efforts.

The effectiveness of our controls and procedures may in the future be limited by a variety of factors, including:

- faulty human judgment and simple errors, omissions or mistakes;
- fraudulent action of an individual or collusion of two or more people;
- inappropriate management override of procedures; and
- the possibility that any enhancements to controls and procedures may still not be adequate to assure timely and accurate financial information.

If we are not able to comply with the requirements of Section 404 in a timely manner, or if we or our independent registered public accounting firm identify deficiencies in our internal control over

financial reporting that are deemed to be material weaknesses, we may be subject to Nasdaq delisting, investigations by the U.S. Securities and Exchange Commission (SEC) and civil or criminal sanctions.

Our ability to successfully implement our business plan and comply with Section 404 requires us to be able to prepare timely and accurate financial statements. We expect that we will need to continue to improve existing, and implement new operational, financial and accounting systems, procedures and controls to manage our business effectively.

Any delay in the implementation of, or disruption in the transition to, new or enhanced systems, procedures or controls may cause our operations to suffer, and we may be unable to conclude that our internal control over financial reporting is effective and to obtain an unqualified report on internal controls from our auditors as required under Section 404 of Sarbanes-Oxley. If we are unable to complete the required Section 404 assessment as to the adequacy of our internal control over financial reporting, if we fail to maintain or implement adequate controls, or if our independent registered public accounting firm is unable to provide us with an unqualified report as to the effectiveness of our internal control over financial reporting as of the date of our first Form 10-K for which compliance is required, our ability to obtain additional financing could be impaired. In addition, investors could lose confidence in the reliability of our internal control over financial reporting and in the accuracy of our periodic reports filed under the Securities Exchange Act of 1934, as amended (Exchange Act). A lack of investor confidence in the reliability and accuracy of our public reporting could cause our stock price to decline.

The interests of our largest stockholder, Norsk Hydro, may conflict with our interests or your interests now or in the future.

Norsk Hydro currently owns approximately 35% of all issued and outstanding shares of our common stock and, until June 15, 2009, has an option to acquire additional shares to maintain its ownership of up to 35% of all issued and outstanding shares of our common stock. See "Certain Relationships and Related Party Transactions Transactions Involving Norsk Hydro Produksjon AS." As a result, Norsk Hydro may have the ability to prevent any transaction that requires the approval of stockholders regardless of whether other stockholders believe that any such transaction is in their own best interests. Additionally, Norsk Hydro currently holds one seat on our Board of Directors, which affords Norsk Hydro additional control and influence over matters affecting our business.

Norsk Hydro may from time to time acquire and hold interests in businesses that compete directly or indirectly with us. Norsk Hydro also may pursue opportunities (including by acquisition) that may be adverse to, or be in direct or indirect competition with, us. Additionally, our potential customers may be competitors of Norsk Hydro and our interests in selling to those customers could be divergent from Norsk Hydro's competitive interests. So long as Norsk Hydro continues to own a significant amount of the outstanding shares of our common stock, Norsk Hydro may be able to strongly influence or effectively control our decisions.

Currency translation risk may negatively affect our net sales, cost of sales, gross margin or profitability and could result in exchange losses.

Although our reporting currency is the U.S. dollar, we may conduct business and incur costs in the local currencies of other countries in which we operate, make sales or buy equipment or materials. As a result, we are subject to currency translation risk. For example, in 2007 we purchased equipment from suppliers in Japan, the United Kingdom and Germany, and our capital expenditures exceeded budgeted amounts due to the decline of the U.S. dollar versus the British pound and the euro. Until, and in some cases after, we place firm purchase orders for capital equipment with each of our suppliers, changes in currency exchange rates could significantly increase our capital expenditures beyond what we have budgeted. Further, changes in exchange rates between foreign currencies and the U.S. dollar could affect our net sales and cost of sales and could result in exchange losses. We cannot accurately predict future exchange rates or the overall impact of future exchange rate fluctuations on our business, results of operations and financial condition.

We depend on a limited number of third-party suppliers for key raw materials, and their failure to perform could cause manufacturing delays and impair our ability to deliver PV modules to customers in the required quality and quantity and at a price that is profitable to us.

Our failure to obtain raw materials and components that meet our quality, quantity and cost requirements in a timely manner could interrupt or impair our ability to manufacture our PV modules or increase our manufacturing cost. Most of our key raw materials are either sole-sourced or sourced by a limited number of third-party suppliers. As a result, the failure of any of our suppliers to perform could disrupt our supply chain and impair our operations. In addition, many of our suppliers are small companies that may be unable to supply our increasing demand for raw materials as we implement our planned expansion. We may be unable to identify new suppliers in a timely manner or on commercially reasonable terms. Raw materials from new suppliers may also be less suited for our technology and yield PV modules with lower conversion efficiencies, higher failure rates and higher rates of degradation than PV modules manufactured with the raw materials from our current suppliers.

Any change to our relationship with ITN could disrupt certain aspects of our business operations, including our research and development activities.

Pursuant to a Service Center Agreement in place until December 31, 2009, we have the right to use certain of ITN's laboratories, equipment and research and development tools on an as needed basis. Also, pursuant to an Administrative Services Agreement in place until December 31, 2008, ITN provides us with certain administrative services at cost, such as facilities management, equipment maintenance, procurement, information technology and technical support. See "Certain Relationships and Related Party Transactions Transactions with ITN Energy Systems, Inc." We have relied on these arrangements to conduct a large portion of our research and development activities, including those related to development and improvements of new PV technologies that may affect the viability of our products in the future. We also have relied on these arrangements for back office support services at what we believe are competitive prices. Any change to our existing relationship with ITN, including the sale of ITN to a third party or termination or alteration of the Service Center Agreement or Administrative Services Agreement, could disrupt our research and development activities and other aspects of our business. Among other things, we may be forced to seek and obtain access to different sources of laboratory equipment and tools, or we may be forced to find alternative providers of affected administrative services, or to perform administrative services ourselves. We cannot guarantee that we would be able to do so on the same or as favorable terms than we currently have with ITN, or at all; and the increased costs of alternative arrangements may materially and adversely affect our business, results of operations and financial condition.

Our future success depends on retaining our existing management team and hiring and assimilating new key employees, and our inability to attract or retain key personnel would materially harm our business and results of operations.

Our success depends on the continuing efforts and abilities of our executive officers, including Matthew Foster, our President and Chief Executive Officer, Gary Gatchell, our Chief Financial Officer, Dr. Joseph Armstrong, our Chief Technology Officer, Dr. Prem Nath, our Vice President of Manufacturing, and Dr. Mohan Misra, our Chief Strategy Officer. Our future success also will depend on our ability to attract and retain highly skilled employees, including management, technical and sales personnel. In addition, none of our management or employees is subject to non-compete agreements. The loss of any of our key personnel, the inability to attract, retain or assimilate key personnel in the future, or delays in hiring required personnel could materially harm our business, results of operations and financial condition.

Problems with product quality or performance may cause us to incur warranty expenses, damage our market reputation and prevent us from maintaining or increasing our market share.

We do not have sufficient life cycle data for our thin-film PV modules to reliably predict their lifespans in the field. Pending collection of such data over time, we may not be able to offer customers warranty terms equivalent to those of our competitors, which may adversely impact sales or market acceptance of our PV modules. Further, even if we offer warranty terms equivalent to those of our competitors, at this time we cannot guarantee that our PV modules will perform as expected during the lifespans that our customers will expect. If our PV modules fail to perform as expected while under warranty, or if we are unable to support the warranties, sales of our PV modules may be adversely affected or our costs may increase, and our business, results of operations and financial condition could be materially and adversely affected.

Our failure to further refine our technology and develop and introduce improved PV modules could render our PV modules uncompetitive or obsolete and adversely affect sales of our PV modules and our ability to be profitable.

We will need to invest significant financial resources in research and development to keep pace with technological advances in the solar energy industry. However, research and development activities are inherently uncertain and we could encounter practical difficulties in commercializing our research results. Our expenditures on research and development may not produce corresponding benefits. Other companies are developing a variety of competing PV technologies and could produce PV modules that prove more cost-effective or have better performance or reliability than our PV modules. As a result, our PV modules may be rendered obsolete or unattractive by the technological advances of others, which could reduce sales of our PV modules and adversely affect our business, results of operations and financial condition.

Our PV modules contain limited amounts of cadmium sulfide, and claims of human exposure or future regulations could have a material adverse effect on our business, results of operations and financial condition.

Our PV modules contain limited amounts of cadmium sulfide, which is regulated as a hazardous material due to the adverse health effects that may arise from human exposure. We cannot assure you that human or environmental exposure to cadmium sulfide used in our PV modules will not occur. Any such exposure could result in third-party claims against us, damage to our reputation and heightened regulatory scrutiny of our PV modules. Future regulation relating to the use of cadmium in various products could impact the manufacture and sale of our PV modules and could require us to incur unforeseen environmental costs. The occurrence of future events such as these could limit our ability to sell and distribute our PV modules, and could have a material adverse effect on our business, results of operations and financial condition.

Environmental obligations and liabilities could have a substantial negative impact on our financial condition, cash flows and profitability.

We are subject to a variety of federal, state, local and foreign laws and regulations relating to the protection of the environment, including those governing the use, handling, generation, processing, storage, transportation and disposal of, or human exposure to, hazardous and toxic materials, the discharge of pollutants into the air and water, and occupational health and safety. We are also subject to environmental laws which allow regulatory authorities to compel, or seek reimbursement for, cleanup of environmental contamination at sites now or formerly owned or operated by us and at facilities where our waste is or has been disposed. We may incur significant costs and capital expenditures in complying with these laws and regulations. In addition, violations of, or liabilities under, environmental laws or permits may result in restrictions being imposed on our operating activities or in our being subjected to substantial fines, penalties, criminal proceedings, third party property damage or personal injury claims, cleanup costs or other costs. Also, future developments such as more aggressive enforcement policies, the implementation of new, more stringent laws and regulations, or the discovery of presently unknown environmental conditions or non-compliance may require expenditures that could have a material adverse effect on our business, results of operations and financial condition. Further, greenhouse gas emissions have increasingly become the subject of international, national, state and local attention. Although future regulations could potentially lead to an increased use of alternative energy, there can be no guarantee that such future regulations will encourage solar technology. Given our limited history of operations, it is difficult to predict future environmental expenses.

Our intellectual property rights may be inadequate to protect our business, which may result in the unauthorized use of our products or reduced sales or otherwise reduce our ability to compete.

Our business and competitive position depend upon our ability to protect our intellectual property rights and proprietary technology, including any PV modules that we develop. We attempt to protect our intellectual property rights, both in the United States and in foreign countries, through a combination of patent, trade secret and other intellectual property laws, as well as licensing agreements and third-party nondisclosure and assignment agreements. Because of the differences in foreign patent and other laws concerning intellectual property rights, our intellectual property rights may not receive the same degree of protection in foreign countries as they would in the United States. Our failure to obtain or maintain adequate protection of our intellectual property rights for any reason could have a material adverse effect on our business, results of operations and financial condition. Further, any patents issued in connection with our efforts to develop new technology for PV modules may not be broad enough to protect all of the potential uses of our technology.

We have applied for patent protection in the U.S. relating to certain existing and proposed technologies and processes and services. While we generally apply for patents in those countries where we intend to make, have made, use, or sell patented products, we may not accurately predict all of the countries where patent protection will ultimately be desirable. If we fail to timely file a patent application in any such country, we may be precluded from doing so at a later date. Furthermore, we cannot assure you that any of our patent applications will be approved. We also cannot assure you that the patents issued as a result of our foreign patent applications will have the same scope of coverage as our United States patents. The patents we own could be challenged, invalidated or circumvented by others and may not be of sufficient scope or strength to provide us with any meaningful protection or commercial advantage. Further, we cannot assure you that competitors will not infringe our patents, or that we will have adequate resources to enforce our patents.

Many patent applications in the U.S. are maintained in secrecy for a period of time after they are filed, and since publication of discoveries in the scientific or patent literature tends to lag behind actual discoveries by several months, we cannot be certain that we will be the first creator of inventions covered by any patent applications we make or that we will be the first to file patent applications on

such inventions. Because some patent applications are maintained in secrecy for a period of time, there is also a risk that we could adopt a technology without knowledge of a pending patent application, which technology would infringe a third party patent once that patent is issued.

We also rely on unpatented proprietary technology. It is possible that others will independently develop the same or similar technology or otherwise obtain access to our unpatented technology. To protect our trade secrets and other proprietary information, we require our employees, consultants and advisors to execute proprietary information and invention assignment agreements when they begin working for us. We cannot assure you that these agreements will provide meaningful protection of our trade secrets, know-how or other proprietary information in the event of any unauthorized use, misappropriation or disclosure of any such trade secrets, know-how or other proprietary information. Despite our efforts to protect this information, unauthorized parties may attempt to obtain and use information that we regard as proprietary. If we are unable to maintain the proprietary nature of our technologies, we could be materially adversely affected.

Although we rely on copyright laws to protect the works of authorship created by us, we do not register the copyrights in all of our copyrightable works. Copyrights of U.S. origin must be registered before the copyright owner may bring an infringement suit in the United States. Furthermore, if a copyright of U.S. origin is not registered within three months of publication of the underlying work, the copyright owner is precluded from seeking statutory damages or attorneys' fees in any United States enforcement action, and is limited to seeking actual damages and lost profits. Accordingly, if one of our unregistered copyrights of U.S. origin is infringed by a third party, we will need to register the copyright before we can file an infringement suit in the United States, and our remedies in any such infringement suit may be limited.

In addition, when others control the prosecution, maintenance and enforcement of certain important intellectual property, such as technology licensed to us, the protection of the intellectual property rights may be outside of our control. If the entity that controls intellectual property rights that are licensed to us does not adequately protect those rights, our rights may be impaired, which may impact our ability to develop, market and commercialize our products. Further, if we breach the terms of any license agreement pursuant to which a third party licenses us intellectual property rights, our rights under that license may be affected and we may not be able to continue to use the licensed intellectual property rights, which could adversely affect our ability to develop, market and commercialize our products.

Further, some of our patents and related know-how and other technology may cover inventions that were conceived or first reduced to practice under, or in connection with, U.S. government contracts or other federal funding agreements. Although we retain ownership of intellectual property developed during the performance of government contracts, the U.S. government may retain a nonexclusive, non-transferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the U.S. the invention throughout the world. Further, the federal government may retain the right to impose a compulsory license in certain circumstances through the exercise of "march-in" rights under which it can compel us to license the intellectual property. If the government were to exercise "march-in" rights, we could be forced to license intellectual property developed by us on terms unfavorable to us, and our business could be materially and adversely affected. Furthermore, our ability to exclusively license or assign the intellectual property developed under these federal funding agreements to third parties may be limited or subject to the U.S. government's approval or oversight. These limitations could have a significant impact on the commercial value of the developed intellectual property in the U.S., and similar rights may be present in other countries. If one or more governments should exercise such rights, our ability to achieve profitability could be compromised and our business prospects harmed.

Our means of protecting our intellectual property rights may not be adequate, and our competitors may: independently develop substantially equivalent proprietary information, products and techniques; otherwise gain access to our proprietary information; or design around our patents or other intellectual property, any of which could result in significant costs or substantial damages to our business and our inability to manufacture, market or sell our products.

If third parties claim that we are infringing or misappropriating their intellectual property rights, we could be prohibited from selling our PV modules, be required to obtain licenses from third parties or be forced to develop non-infringing alternatives, and we could be subject to substantial monetary damages and injunctive relief.

The PV industry is characterized by the existence of a large number of patents and frequent litigation based on allegations of patent infringement. We are aware of numerous issued patents and pending patent applications owned by third parties that may relate to current and future generations of solar energy. The owners of these patents may assert that the manufacture, use or sale of any of our products infringes one or more claims of their patents. Moreover, because patent applications can take many years to issue, there may be currently pending applications, unknown to us, which may later result in issued patents that materially and adversely affect our business. Third parties could also assert claims against us that we have infringed or misappropriated their intellectual property rights. Whether or not such claims are valid, we cannot be certain that we have not infringed the intellectual property rights of such third parties. Any infringement or misappropriation claim could result in significant costs or substantial damages to our business or an inability to manufacture, market or sell any of our PV modules that are found to infringe or misappropriate. Even if obtaining a license were feasible, it could be costly and time consuming. Even if we were to prevail in any such action, the litigation could result in substantial cost and diversion of resources that could materially and adversely affect our business. The large number of patents, the rapid rate of new patent issuances, the complexities of the technology involved and uncertainty of litigation increase the risk of business assets and management's attention being diverted to patent litigation.

We currently anticipate having substantial international operations that will subject us to a number of risks, including potential unfavorable political, regulatory, labor and tax conditions in foreign countries.

We expect to expand our operations abroad in the future and, as a result, we may be subject to the legal, political, social and regulatory requirements and economic conditions of foreign jurisdictions. Risks inherent to international operations, include, but are not limited to, the following:

- difficulty in procuring supplies and supply contracts abroad;
- difficulty in enforcing agreements in foreign legal systems;
- foreign countries imposing additional withholding taxes or otherwise taxing our foreign income, imposing tariffs or adopting other restrictions on foreign trade and investment, including currency exchange controls;
- inability to obtain, maintain or enforce intellectual property rights;
- risk of nationalization;
- changes in general economic and political conditions in the countries in which we may operate, including changes in the government incentives we might rely on;
- unexpected adverse changes in foreign laws or regulatory requirements, including those with respect to environmental protection, export duties and quotas;
- difficulty with staffing and managing widespread operations;

trade barriers such as export requirements, tariffs, taxes and other restrictions and expenses, which could increase the prices of our products and make us less competitive in some countries; and

difficulty of and costs relating to compliance with the different commercial and legal requirements of the international markets in which we plan to offer and sell our PV modules.

Our business in foreign markets will require us to respond to rapid changes in market conditions in these countries. Our overall success as an international business depends, in part, on our ability to succeed in differing legal, regulatory, economic, social and political conditions. If we are not be able to develop and implement policies and strategies that are effective in each location where we will do business, then our business, results of operations and financial condition could be materially and adversely affected.

Our failure to secure proper sites and facilities in which to install manufacturing equipment could adversely affect our business and results of operations.

We intend to install manufacturing equipment both domestically and abroad. Selecting suitable locations for this equipment requires consideration of a variety of factors, including availability of a skilled workforce, size and configuration of facilities, proximity to customers, transportation and infrastructure, cost of land and facilities, currency exchange rates and the prevailing political and regulatory environment. A variety of factors related to the location and selection of such sites and facilities could cause our operations to miss our expectations, and adversely affect our business, results of operations and financial condition.

Our failure to qualify for Small Business Innovation Research funding could adversely impact our revenues from research and development contracts; further, upon the exercise of "march-in" rights by the federal government, we could be forced to license intellectual property developed by us on terms unfavorable to us.

We currently receive funding for research and development under the Small Business Innovation Research (SBIR) program. In 2007, our revenues generated from performance of these contracts totaled approximately $1.0 million. In order to continue to qualify for this funding, we must remain American-owned and independently operated and our size must remain under 500 employees. As a result of our relationship with Norsk Hydro and our planned expansion plans, we cannot guarantee that we will be able to continue to qualify for SBIR funding. If we fail to qualify for SBIR funding, our revenues from research and development could decline or cease, and our net income and financial condition could be could materially and adversely affected.

Risks Relating to an Investment in Our Common Stock

Our common stock could be subject to extreme volatility.

Our common stock is currently traded on the Nasdaq Global Market. The trading price of our common stock from time to time has fluctuated widely and may be subject to similar fluctuations in the future. For example, for the calendar year ended December 31, 2007, the 52-week high and low reported closing prices of our common stock were $28.35 and $2.41, respectively. The trading price of our common stock in the future may be affected by a number of factors, including events described in these "Risk Factors." In recent years, broad stock market indices, in general, and smaller capitalization and PV companies, in particular, have experienced substantial price fluctuations. In a volatile market, we may experience wide fluctuations in the market price of our common stock. These fluctuations may have a negative effect on the market price of our common stock regardless of our operating performance. In the past, following periods of volatility in the market price of a company's securities, securities class action litigation has often been instituted. A securities class action suit against us could

result in substantial costs, potential liabilities and the diversion of management's attention and resources, and could have a material adverse effect on our financial condition.

Future sales or the potential for future sales of our securities may cause the trading price of our common stock to decline and could impair our ability to raise capital through subsequent equity offerings.

Sales of a substantial number of shares of our common stock or other securities in the public markets, or the perception that these sales may occur, could cause the market price of our common stock or other securities to decline and could materially impair our ability to raise capital through the sale of additional securities. A substantial number of our outstanding shares of common stock are subject to lock-up agreements. As these shares are released from the lock-up agreements, the sale of such shares could cause the market price of our common stock to decline. Furthermore, a large number of our outstanding shares are not registered under the Securities Act of 1933, as amended (the Securities Act). If and when these shares are registered and become eligible for sale to the public market, the market price of our common stock could decline.

While any of our warrants are outstanding, it may be more difficult to raise additional equity capital.

There currently are warrants outstanding to purchase our securities. These warrants include Class B warrants and warrants issued to the representative of the underwriters in our initial public offering. During the term that any of our warrants are outstanding, the holders of those warrants are given the opportunity to profit from a rise in the market price of our common stock. The Class B warrants are not redeemable by us. We may find it more difficult to raise additional equity capital while these warrants are outstanding. At any time during which these warrants are likely to be exercised, we may be unable to obtain additional equity capital on more favorable terms from other sources. See "Description of Securities Class B Warrants" and "Description of Securities IPO Warrants."

Some provisions of our charter documents and Delaware law may have anti-takeover effects that could discourage an acquisition of us by others, even if an acquisition would be beneficial to our stockholders, and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our Certificate of Incorporation and Bylaws, as well as provisions of Delaware law, could make it more difficult for a third party to acquire us, or for a change in the composition of our Board of Directors or management to occur, even if doing so would benefit our stockholders. These provisions include:

- authorizing the issuance of "blank check" preferred stock, the terms of which may be established and shares of which may be issued without stockholder approval;
- dividing our Board of Directors into three classes;
- limiting the removal of directors by the stockholders; and
- limiting the ability of stockholders to call a special meeting of stockholders.

In addition, we are subject to Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any of a broad range of business combinations with an interested stockholder for a period of three years following the date on which the stockholder became an interested stockholder, unless such transactions are approved by our Board of Directors. This provision could have the effect of delaying or preventing a change of control, whether or not it is desired by or beneficial to our stockholders. See "Description of Securities Anti-Takeover Effects of Certain Provisions of Delaware Law and Our Certificate of Incorporation and Bylaws."

FORWARD-LOOKING STATEMENTS

This prospectus includes "forward-looking statements" that involve risks and uncertainties. Forward-looking statements include statements concerning our plans, objectives, goals, strategies, future events, future net sales or performance, capital expenditures, financing needs, plans or intentions relating to acquisitions, business trends and other information that is not historical information and, in particular, appear under headings including "Prospectus Summary," "Management's Discussion and Analysis of Financial Condition and Results of Operations," "Industry" and "Business." When used in this prospectus, the words "estimates," "expects," "anticipates," "projects," "plans," "intends," "believes," "forecasts," "foresees," "likely," "may," "should," "goal," "target" and variations of such words or similar expressions are intended to identify forward-looking statements. All forward-looking statements are based upon information available to us on the date of this prospectus.

These forward-looking statements are subject to risks, uncertainties and other factors, many of which are outside of our control, that could cause actual results to differ materially from the results discussed in the forward-looking statements, including, among other things, the matters discussed in this prospectus in the sections captioned "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations." Factors you should consider that could cause these differences are:

Our limited operating history and lack of profitability;

Our ability to meet the cost and performance metrics that we have forecasted;

Our ability to develop demand for, and sales of, our PV modules and establish strategic relationships with key partners, including OEMs, system integrators and distributors;

Our ability to obtain necessary or desired certifications for our PV modules;

Whether we receive timely delivery of production tools from our equipment suppliers;

Our ability to design, purchase, install, qualify and operate production tools pursuant to our business plan and within budgeted amounts;

The extent to which we are able to reduce the per watt manufacturing costs of our PV modules, and the extent to which our competitors are able to do the same with their PV modules;

Global demand for electricity and the market for renewable energy, including solar energy;

The cost-effectiveness of PV-generated energy relative not only to that generated from conventional sources such as fossil fuels, but also to that generated from other renewable sources such as wind, geothermal and tidal power;

The availability of, or changes to, government policies, subsidies and incentives that affect the use or cost of renewable energy;

The emergence of disruptive or competing technologies in the energy industry;

Our competitive position and that of our PV modules relative to others in the PV and thin-film markets;

The extent to which our interests align with or deviate from that of Norsk Hydro, our largest stockholder;

Foreign currency exchange fluctuations, political instability in certain foreign markets or the general state of geopolitical affairs;

The supply and price of equipment, components and raw materials;

The status of our relationship with ITN;

Our ability to attract and retain key executives and employees;

Our continued investment in research and development, and our ability to remain competitive through development of new technologies;

The extent to which we are able to manage the expansion of our operations effectively, both domestically and abroad;

Commencement of legal proceedings against us or by us, including proceedings relating to environmental matters or intellectual property rights;

Our ability to expand and protect the intellectual property portfolio that relates to our PV modules and processes;

The extent to which we qualify to perform research and development under the federal government's SBIR program; and

General economic and business conditions.

There may be other factors that could cause our actual results to differ materially from the results referred to in the forward-looking statements. We undertake no obligation to publicly update or revise forward-looking statements to reflect subsequent events or circumstances after the date made or to reflect the occurrence of unanticipated events, except as required by law.

USE OF PROCEEDS

Based on an assumed offering price of $16.03 per share, the last reported sale price of our common stock on April 24, 2008, the net proceeds from the sale of the 3,250,000 shares that we are selling in this offering will be approximately $48,272,000, or approximately $56,617,000 if the underwriters exercise their over-allotment option in full.

We intend to use the net proceeds of this offering, together with the net proceeds we received from Norsk Hydro in March 2008 from its exercise of an option to purchase shares of our common stock, for the design, purchase, installation, qualification and testing of production tools for approximately 30 MW of rated production capacity, and for general corporate purposes. See "Certain Relationships and Related Party Transactions Transactions Involving Norsk Hydro AS."

In order to design, purchase, install, qualify and test the production tools required to achieve an additional approximately 30 MW of rated production capacity, we intend to apply the net proceeds of this offering to a number of items, including: (i) the purchase and installation of capital equipment; (ii) acquisitions and modifications of facilities, laboratory equipment, test equipment, and quality control equipment; (iii) the labor associated with the engineering, installation and qualification; and (iv) product certification and test procedures. We expect that net proceeds from any exercise of the underwriters' over-allotment option would be applied to the same purposes.

The foregoing information is an estimate based on our current business plan. We may find it necessary to shift funds reserved for one category of uses to another. For example, if our non-recurring engineering and other costs exceed current estimates due to increases in costs of materials or equipment, we may be forced to draw from funds budgeted for other purposes. In such cases, we may find it necessary or advisable to re-allocate portions of the net proceeds we receive from this offering, and we will have broad discretion in doing so. Investors will be relying on the judgment of management regarding the application of these net proceeds. Pending these uses, we intend to invest the net proceeds of the offering in short term, interest-bearing securities.

A $1.00 increase or decrease in the assumed public offering price of $16.03 per share would increase or decrease the net proceeds to us from this offering by $3,055,000, assuming the number of shares offered by us, as shown on the cover of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

PRICE RANGE OF COMMON STOCK

Our common stock has been listed on the Nasdaq Global Market under the symbol "ASTI" since November 13, 2007, and on the Nasdaq Capital Market from August 10, 2006 until November 13, 2007. Prior to August 10, 2006, there was no public market for our common stock. The following table sets forth the range of high and low sales prices per share as reported on Nasdaq for the periods indicated.

	High	Low
Fiscal 2006		
Third Quarter (since August 10, 2006)	$ 3.50	$ 2.01
Fourth Quarter	$ 3.95	$ 2.09
Fiscal 2007		
First Quarter	$ 10.44	$ 2.41
Second Quarter	$ 11.34	$ 6.99
Third Quarter	$ 19.75	$ 6.50
Fourth Quarter	$ 28.35	$ 13.17
Fiscal 2008		
First Quarter	$ 27.95	$ 8.02
Second Quarter (through April 24, 2008)	$ 17.99	$ 14.25

The closing sales price of our common stock on the Nasdaq Global Market was $16.03 per share on April 24, 2008. As of March 5, 2008, there were approximately 51 record holders of our common stock, and we believe that there were approximately 9,400 beneficial owners of our common stock.

DIVIDEND POLICY

We have never paid, and it is our present intention for the foreseeable future not to pay, dividends on our common stock. The declaration and payment of dividends is subject to the discretion of our Board of Directors and depends on various factors, including our net income, financial conditions, cash requirements, future prospects, contractual restrictions and other factors deemed relevant by our Board of Directors.

CAPITALIZATION

The following table sets forth our:

Actual capitalization as of March 31, 2008; and

As adjusted capitalization as of March 31, 2008, after giving effect to our sale of 3,250,000 shares of common stock in this offering, assuming the underwriters do not exercise their over-allotment option, and after deducting the estimated underwriting discounts and commissions and offering expenses payable by us.

	March 31, 2008	
	Actual	**As Adjusted**
DEBT	$ 4,136,475	$ 4,136,475
STOCKHOLDERS' EQUITY		
Preferred stock, $0.0001 par value: 25,000,000 shares authorized: no shares issued and outstanding	$	$
Common stock, $0.0001 par value: 75,000,000 shares authorized: 14,049,352 shares issued and outstanding March 31, 2008 actual; 17,299,352 shares issued and outstanding as adjusted	1,405	1,730
Additional paid-in capital	90,879,145	139,150,470
Deficit accumulated during development stage	(14,290,256)	(14,290,256)
Total capitalization	$ 80,726,769	$ 128,998,419

You should read this table in conjunction with the sections of this prospectus captioned "Use of Proceeds," "Selected Historical Financial Data" and "Management's Discussion and Analysis of Financial Condition and Results of Operations," as well as the financial statements and related notes included elsewhere in this prospectus.

A $1.00 increase or decrease in the assumed offering price of $16.03 per share would affect our cash position, additional paid-in capital and total capitalization as follows, assuming the number of shares offered by us, as shown on the cover of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us:

	If a $1.00 increase:	**If a $1.00 decrease:**
Additional paid-in capital	$ 142,205,470	$ 136,095,470
Total capitalization	$ 132,053,419	$ 125,943,419

DILUTION

If you invest in our common stock in this offering, your ownership interest will be diluted to the extent of the difference between the public offering price per share of our common stock and the as adjusted net tangible book value per share of our common stock upon completion of this offering. Historical net tangible book value per share is determined by dividing our total tangible assets (total assets less intangible assets), less total liabilities by the number of outstanding shares of our common stock. The historical net tangible book value of our common stock as of March 31, 2008 was approximately $76.5 million, or approximately $5.44 per share of common stock, based on the number of shares of common stock outstanding as of March 31, 2008.

Investors participating in this offering will incur immediate and substantial dilution. After giving effect to the sale of common stock offered by us in this offering at the assumed public offering price of $16.03 per share, and after deducting the underwriting discounts and commissions and estimated offering costs payable by us, our as adjusted net tangible book value as of March 31, 2008 would have been approximately $124.8 million, or approximately $7.21 per share of common stock. This represents an immediate increase in as adjusted net tangible book value of $1.77 per share to existing common stockholders, and an immediate dilution of $8.82 per share to investors participating in this offering. The following table illustrates this per share dilution:

Public offering price per share[(1)]		$ 16.03
Historical net tangible book value per share as of March 31, 2008	5.44	
Increase in historical net tangible book value per share attributable to investors participating in this offering	1.77	
As adjusted historical net tangible book value per share after this offering		7.21
Dilution per share to investors participating in this offering		$ 8.82

(1) Based upon the last reported sale price of our common stock on April 24, 2008.

If the underwriters also exercise their option in full to purchase 487,500 additional shares of common stock in this offering, our as adjusted net tangible book value per share as of March 31, 2008 would have been $7.43 per share, the increase in our net tangible book value per share to existing stockholders would be $1.99 per share and the dilution to new investors participating in this offering would be $8.60 per share.

SELECTED HISTORICAL FINANCIAL DATA

The following table sets forth our selected financial data for the periods and at the dates indicated. The selected financial data for the fiscal years ended December 31, 2006 and December 31, 2007 and as of December 31, 2006 and December 31, 2007 have been derived from our audited financial statements included elsewhere in this prospectus. The selected financial data for the three months ended March 31, 2007 and March 31, 2008 and as of March 31, 2007 and March 31, 2008 have been derived from our unaudited financial statements included elsewhere in this prospectus.

The information presented below should be read in conjunction with "Use of Proceeds," "Capitalization," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the financial statements and related notes included elsewhere in this prospectus. The historical results are not necessarily indicative of the results to be expected in future periods.

	Year Ended		Three Months Ended	
	Dec 31, 2006	Dec 31, 2007	Mar 31, 2007	Mar 31, 2008
	(dollars in thousands, except per share data)			
Statements of Operations Data:				
Research & Development Revenues	$	$ 1,003	$ 235	$ 305
Research & Development Expenses	(691)	(3,975)	(760)	(1,685)
General and Administrative Expenses	(2,684)	(4,954)	(994)	(1,331)
Loss from Operations	(3,375)	(7,926)	(1,519)	(2,711)
Interest Income (Expense), Net	(806)	1,423	146	312
Net Loss	$ (4,181)	$ (6,503)	$ (1,373)	$ (2,399)
Net Loss Per Share (Basic and Diluted)	$ (1.45)	$ (0.70)	$ (0.24)	$ (0.20)
Weighted Average Common Shares Outstanding (Basic and Diluted)	2,881,639	9,237,252	5,694,561	11,807,789
Other Financial Data:				
Net Cash Used in Operating Activities	$ 2,757	$ 4,294	$ 990	$ 1,608
Capital Expenditures	467	11,013	1,399	6,284

	As of		
	Dec 31, 2006	Dec 31, 2007	As of Mar 31, 2008
	(in thousands)		
Balance Sheet Data:			
Cash, cash equivalents and short term investments	$ 10,671	$ 37,701	$ 63,747
Property and equipment, net	91	1,651	14,505
Deposits on manufacturing equipment	370	9,720	2,986
Total assets	11,290	49,817	82,301
Current and long term liabilities	389	1,195	5,710
Total stockholders' equity	10,901	48,622	76,590

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion of our financial condition and results of operations should be read in conjunction with our financial statements and accompanying notes included elsewhere in this prospectus. This discussion and analysis contains statements of a forward-looking nature that involve known and unknown risks. Our actual results may differ materially from those anticipated in these forward-looking statements. The following discussion should be read in conjunction with the other parts of this prospectus, including "Risk Factors," "Forward-Looking Statements" and the financial statements and related notes included elsewhere in this prospectus.

Overview

We are a development stage company formed to commercialize flexible PV modules using proprietary technology. For the year ended December 31, 2007 and the three months ended March 31, 2008, we generated approximately $1.0 million and $305,000, respectively, in revenues, none of which came from our planned principal operations to commercialize flexible PV modules. As of March 31, 2008, we had an accumulated deficit of approximately $14.3 million. Under our current business plan, we expect losses to continue through at least 2009. To date, we have financed our operations primarily through public and private equity financings.

Our path to commercialization is defined by a highly disciplined, staged progression based upon the achievement of key milestones. We completed construction of a 1.5 MW production line on schedule in December 2007 after having consistently achieved PV cell conversion efficiencies of approximately 10% to 12%, and PV module conversion efficiencies of approximately 6% to 8%, and as high as 9.6%, in a pre-production prototyping and test facility that we have operated since the fourth quarter of 2006. Conversion efficiency is the percentage of energy from absorbed light that a device is able to convert into electrical energy. Over time and with further refinement of our existing processes, we believe that our PV modules should be able to consistently achieve efficiencies of 10% to 12%. We are now testing and qualifying our 1.5 MW production line in anticipation of commencing limited commercial production during the second quarter of 2008 with an emphasis on module testing and further optimization of production yield. Our production line incorporates into an integrated process each of the discrete manufacturing steps that have been previously tested in our pre-production prototyping and test facility.

Our manufacturing expansion plan entails the design, installation, qualification, testing and operation of additional production tools to increase our rated production capacity, and contemplates the addition of approximately 30 MW of rated capacity by the end of 2009, another approximately 30 MW of rated capacity by the end of 2010 and another approximately 50 MW of rated capacity by the end of 2011. We therefore expect to have approximately 110 MW of rated production capacity in place by the end of 2011. Rated production capacity refers to our expected level of annual production upon optimizing our production process and is based on assumed production yields and module efficiencies. The actual production levels that we are able to realize at any point during our planned expansion will depend on a variety of factors, including our ability to optimize our production process to achieve targeted production yields and module efficiencies. See Risk Factors including "Risk Factors We have a limited history of operations, have not generated any revenue from operations and have not commenced commercial production of our PV modules."

1.5 MW Production Line Status

The major modifications to our building and facilities in Littleton, Colorado to accommodate the new 1.5 MW production line were completed, and all the requisite production tools and support

equipment were delivered and installed, by the fourth quarter 2007. During the first quarter of 2008, we qualified production tools for the following manufacturing processes:

Manufacturing Process	Manufacturing Tool
Thin-film vacuum coating of molybdenum back contact	Roll-to-roll tool for sputtering
Thin-film vacuum coating of copper, indium, gallium, selenium	Roll-to-roll tool for thermal evaporation
Chemical spray coating of deionized water and cadmium sulfide	Roll-to-roll tool for chemical treatment
Thin-film vacuum coating of transparent conductive oxide (TCO)	Roll-to-roll tool for sputtering
Laser patterning and ink printing of modules	Roll-to-roll monolithic integration tool

The following diagram is a general illustration of our manufacturing process:

In March 2008, we achieved IOC of our 1.5 MW production line as an end-to-end integrated process. Early IOC production trials resulted in average thin-film device efficiencies of 9.5% and small area monolithically integrated module efficiencies of up to approximately 7.1%. During the second quarter of 2008, we intend to commence limited commercial production with an emphasis on manufacturing optimization to achieve desired initial production yields and module efficiencies of 7% to 8%. In order to achieve these objectives, we must successfully transition the manufacturing processes and performance levels achieved with our prototyping tools to the 1.5 MW production line.

Our principal activities during 2008 are expected to be to demonstrate desired production yields, module efficiencies and other targets on a repeatable basis, and to produce product for the following purposes: internal product development; testing and qualification; and external product testing to gain UL, IEC and TÜV certifications, one or more of which is necessary for some product and customer applications. Other product uses include demonstrations, joint product development, limited sales and further market development with new strategic partners and customers. Successful accomplishment of our objectives in these areas is necessary to support the commencement of full-scale manufacturing at the 1.5 MW level and to make progress consistent with our current commercialization and manufacturing expansion plan.

Commercialization and Manufacturing Expansion Plan

We intend to be the first company to manufacture large, roll-format, PV modules in commercial quantities that use CIGS on a flexible, plastic substrate. Our manufacturing expansion plan entails the design, installation, qualification, testing and operation of additional production tools to increase our rated production capacity. We intend to incrementally expand our aggregate production capacity to 110 MW by attaining the following milestones within the time frames indicated:

Second quarter of 2008: commence limited commercial production on 1.5 MW production line.

Second and third quarters of 2008: begin procuring production tools for the first 30 MW of incremental rated capacity.

Third and fourth quarters of 2008: begin certification and qualification of products through UL, IEC and TÜV.

Second quarter of 2009: complete certification of products from 1.5 MW production line.

Third quarter of 2009: begin procuring production tools for the second 30 MW of incremental rated capacity.

Fourth quarter of 2009: complete qualification of production tools for the first 30 MW of incremental rated capacity and commence production at 30 MW of aggregate rated capacity.

Third quarter of 2010: begin procuring production tools for the final 50 MW of incremental rated capacity.

Fourth quarter of 2010: complete qualification of production tools for the second 30 MW of incremental rated capacity and commence production at 60 MW of aggregate rated capacity.

Fourth quarter of 2011: complete qualification of production tools for the final 50 MW of incremental rated capacity and commence production at 110 MW of aggregate rated capacity.

Although we currently plan to expand our production capacity in accordance with the timeline above, the actual timing and amount of production capacity that we install may significantly deviate from the above plan due to market conditions, availability of financing, timeliness of delivery of production tools, product performance and other factors described in this prospectus. See "Significant Trends, Uncertainties and Challenges" below, and Risk Factors including "Risk Factors We have a limited history of operations, have not generated any revenue from operations and have not commenced commercial production of our PV modules."

We do not expect that minor delays in product certifications would significantly affect our ability to continue developing product applications with our customers. However, delays that extend significantly beyond mid-2009 likely would impact our ability to develop demand for our PV modules, and would affect our planned sales and results of operations in 2010, when we expect to have commenced production using